

### **Abstract**

An apparatus that indicates a proximity of a dental instrument in a tooth's root canal to the canal's apical foramen while using the dental instrument to perform a dental/medical procedure. The apparatus includes a signal  
5 generator that provides divider signal across a first node and a third node, and a reference impedance coupled between the first node and a second node. The second node and third node include configuration for electrically coupling between a tip of the dental instrument and an electrode coupled with a body  
10 tissue of the patient, a stimulation signal being defined across the second node and the third node. The apparatus also includes a microprocessor operable to compare the stimulation signal and the divider signal, and generate a proximity signal in response to the comparison, and a proximity indicator that indicates the proximity of the dental instrument to the apical foramen in response to the proximity signal.

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